If part of the signals from one user overlap with another's because of a frequency deviation, these signals cannot be separated in the receiver - the damage cannot be repaired, and it may cause interference between users.

Various attempts in prior art at solving this problem are not effective.

In one prior art system, there are a plurality of receivers at the base station, each receiver is tuned to one subscriber transmitter, with a closed loop to track and correct frequency deviations in that transmitter. Such an approach may be highly complex and expensive when there are a large number of subscriber units. The above solution cannot be used where subscribers share a common channel, rather frequency multiplexing is used, a different band for each subscriber.

B1 cont.

The present disclosure presents a more effective approach, which allows higher performance and flexibility at a lower cost, using a common receiver at the base, for processing signals from all the subscriber transmitters.

In this approach, however, performance degrades rapidly if there are frequency deviations in the received signals. As frequency variations may have different values for the various subscribers, the common receiver cannot track them. Wideband systems, and more so broadband systems, are very sensitive to such frequency deviations, which may cause a deterioration in the orthogonality of subcarriers and information in the received signals, resulting in errors, thus reducing channel quality.

A Doppler frequency shift may result from a mobile subscriber's motion. For example, at a frequency of 2 GHz and a vehicle velocity of 100 km/h, a Doppler of about 185 Hz is expected. The received signal may have any value of deviation, between -185 Hz and +185 Hz; the deviation will usually change with time; the same applies to the other subscribers.

At a higher velocity and/or frequency, a larger Doppler deviation is expected (the Doppler deviation is proportional to velocity and frequency). There are other sources of undesired frequency deviations, such as multiplexers in a fiber-optic channel, etc.

In another prior art system, the subscriber locks on a signal from the base and transmits at that signal. One or more pilots may be used. This, however,

will not correct for frequency deviations due to multiplexers in the channel, both in the downlink and the uplink: as the signal from base deviates because of various causes, the signal received back at the base accumulates all the deviations on the way.

This system will not solve the Doppler frequency shift: assuming a moving subscriber receiving a signal from the base at a frequency deviation of +Fd, if it transmits at the received frequency, then the signal received at the base will have double the deviation or +2Fd, since the Doppler acts the same way in both directions.

B' concl.

Another problem in prior art uplink channels is the need for signals from all the subscribers to arrive at about the same time window at the base, to allow their processing together. Due to different distances to base, the subscribers will be received each at a different time delay - a subscriber farther from base will have a longer time delay.

Yet another problem in prior art communications is the need for dynamic allocation of channels: The radio spectrum is a precious resource; allocating it wisely is of paramount importance.
Various users need each a different channel capacity - some may want to send or receive pictures, which require large amounts of data; others transmit voice or music, which requires less data; others are idle, thinking or waiting for something. Each user's needs may change at a moment's notice. It would be highly desirable to provide a system and method for allocating bandwidth in the amount required by each user - to each user to allocate bandwidth in the system, dynamically, according to their momentary needs.--

<u>In the Claims:</u>

Cancel without prejudice all the claims (Claims 21-40) now pending, and substitute therefor the following new Claims 41 - 60, wherein the Claims start on a new page: